

CLAIMS

1. A basal medium for preparing a medium for culturing ES cells, which has composition shown by the following Table I.

Table I

Components	Concentration (mg/L)	Components	Concentration (mg/L)
L-alanine	1.78 ~ 2.67	Inositol	13.48 ~ 20.22
L-arginine	40 ~ 60	Niacinamide	1.8074 ~ 2.7111
L-arginine HCl	75.8 ~ 113.7	Pyridoxal HCl	1.6 ~ 2.4
L-asparagine H ₂ O	13.002 ~ 19.503	Pyridoxine HCl	0.2124 ~ 0.3186
L-Asparatic acid	6.66 ~ 9.99	Riboflavin	0.2076 ~ 0.3114
L-cysteine HCl · H ₂ O	7.024 ~ 10.536	Thiamine HCl	1.868 ~ 2.802
L-cystine 2HCl	38.058 ~ 57.087	Vitamin B ₁₂	0.273 ~ 0.4095
L-glutamic acid	6.94 ~ 10.41	Hypoxanthine	0.816 ~ 1.224
L-glutamine	439.72 ~ 659.58	Linoleic acid	0.0168 ~ 0.0252
Glycine	15.5 ~ 23.25	Lipoic acid (thioctic acid)	0.042 ~ 0.063
L-histidine	3 ~ 30	Putrecine dihydrochloride	0.0322 ~ 0.0483
L-hydroxyproline	4 ~ 6	Thymidine	0.146 ~ 0.219
L-isoleucine	52.748 ~ 79.122	Sodium chloride	5279.8 ~ 7919.7
L-leucine	54.58 ~ 81.87	Potassium chloride	284.72 ~ 427.08
L-lysine HCl	73.74 ~ 110.61	Calcium chloride (anhydrous)	86.644 ~ 129.966
L-methionine	15.896 ~ 23.844	Calcium nitrate 4H ₂ O	20 ~ 30
L-phenylalanine	30.392 ~ 45.588	Magnesium chloride (anhydrous)	11.444 ~ 17.166
L-proline	10.9 ~ 16.35	Magnesium sulfate (anhydrous)	48.844 ~ 73.266
L-serine	24.9 ~ 37.35	Sodium dihydrogen	43.48 ~ 65.22

		phosphate (anhydrous)	
L-threonine	44.42 ~ 66.63	Disodium monohydrogen phosphate (anhydrous)	188.408 ~ 282.612
L-tryptophan	7.808 ~ 11.712	Glucose (anhydrous)	1860.4 ~ 2790.6
L-tyrosine	33.888 ~ 50.832	Sodium pyruvate	0.001 ~ 220
L-valine	43.86 ~ 65.79	Ferric nitrate 9H ₂ O	0.04 ~ 0.06
Glutathione	0.2 ~ 0.3	Copper sulfate 5H ₂ O	0.0005 ~ 0.00075
Para-aminobenzoic acid	0.2 ~ 0.3	Ferrous sulfate 7H ₂ O	0.1668 ~ 0.2502
Biotin	0.04148 ~ 0.06222	Zinc sulfate 7H ₂ O	0.1728 ~ 0.2592
Calcium pantothenate	1.746 ~ 2.619	Sodium selenite	0.000692 ~ 0.00348
Choline chloride	4.992 ~ 7.488	Phenol red	5.248 ~ 7.872
Folic acid	2.06 ~ 3.09		

2. A basal medium for preparing a medium for culturing ES cells, which has composition shown by the following Table II.

Table II

Components	Concentration (mg/L)	Components	Concentration (mg/L)
L-alanine	1.78 ~ 2.67	Folic acid	2.06 ~ 3.09
L-arginine	40 ~ 60	Inositol	13.48 ~ 20.22
L-arginine HCl	75.8 ~ 113.7	Niacinamide	1.8074 ~ 2.7111
L-asparagine H ₂ O	13.002 ~ 19.503	Pyridoxal HCl	1.6 ~ 2.4
L-Asparatic acid	6.66 ~ 9.99	Pyridoxine HCl	0.2124 ~ 0.3186
L-cysteine HCl H ₂ O	7.024 ~ 10.536	Riboflavin	0.2076 ~ 0.3114
L-cystine 2HCl	38.058 ~ 57.087	Thiamine HCl	1.868 ~ 2.802
L-glutamic acid	6.94 ~ 10.41	Vitamin B ₁₂	0.273 ~ 0.4095
L-glutamine	439.72 ~ 659.58	Hypoxanthine	0.816 ~ 1.224
Glycine	15.5 ~ 23.25	Linoleic acid	0.0168 ~ 0.0252
L-histidine	3 ~ 30	Lipoic acid (thioctic acid)	0.042 ~ 0.063

L-hydroxyproline	4 ~ 6	Putrecine dihydrochloride	0.0322 ~ 0.0483
L-isoleucine	52.748 ~ 79.122	Thymidine	0.146 ~ 0.219
L-leucine	54.58 ~ 81.87	Sodium chloride	5279.8 ~ 7919.7
L-lysine HCl	73.74 ~ 110.61	Potassium chloride	284.72 ~ 427.08
L-methionine	15.896 ~ 23.844	Calcium chloride (anhydrous)	86.644 ~ 129.966
L-phenylalanine	30.392 ~ 45.588	Calcium nitrate 4H ₂ O	20 ~ 30
L-proline	10.9 ~ 16.35	Magnesium chloride (anhydrous)	11.444 ~ 17.166
L-serine	24.9 ~ 37.35	Magnesium sulfate (anhydrous)	48.844 ~ 73.266
L-threonine	44.42 ~ 66.63	Sodium dihydrogen phosphate (anhydrous)	43.48 ~ 65.22
L-tryptophan	7.808 ~ 11.712	Disodium monohydrogen phosphate (anhydrous)	188.408 ~ 282.612
L-tyrosine	33.888 ~ 50.832	Glucose (anhydrous)	1860.4 ~ 2790.6
L-valine	43.86 ~ 65.79	Sodium pyruvate	0.001 ~ 220
Glutathione	0.2 ~ 0.3	Ferric nitrate 9H ₂ O	0.04 ~ 0.06
Para-aminobenzoic acid	0.2 ~ 0.3	Copper sulfate 5H ₂ O	0.0005 ~ 0.00075
Biotin	0.04148 ~ 0.06222	Ferrous sulfate 7H ₂ O	0.1668 ~ 0.2502
Calcium pantothenate	1.746 ~ 2.619	Zinc sulfate 7H ₂ O	0.1728 ~ 0.2592
Choline chloride	4.992 ~ 7.488	Phenol red	5.248 ~ 7.872

3. A basal medium for preparing a medium for culturing ES cells, which has composition shown by the following Table III.

Table III

Components	Concentration (mg/L)	Components	Concentration (mg/L)
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L-alanine	1.78 ~ 2.67	Folic acid	2.06 ~ 3.09
L-arginine	40 ~ 60	Inositol	13.48 ~ 20.22
L-arginine HCl	75.8 ~ 113.7	Niacinamide	1.8074 ~ 2.7111
L-asparagine H ₂ O	13.002 ~ 19.503	Pyridoxal HCl	1.6 ~ 2.4
L-Asparatic acid	6.66 ~ 9.99	Pyridoxine HCl	0.2124 ~ 0.3186
L-cysteine HCl H ₂ O	7.024 ~ 10.536	Riboflavin	0.2076 ~ 0.3114
L-cystine 2HCl	38.058 ~ 57.087	Thiamine HCl	1.868 ~ 2.802
L-glutamic acid	6.94 ~ 10.41	Vitamin B ₁₂	0.273 ~ 0.4095
L-glutamine	439.72 ~ 659.58	Hypoxanthine	0.816 ~ 1.224
Glycine	15.5 ~ 23.25	Linoleic acid	0.0168 ~ 0.0252
L-histidine	3 ~ 30	Lipoic acid (thioctic acid)	0.042 ~ 0.063
L-hydroxyproline	4 ~ 6	Putrecine dihydrochloride	0.0322 ~ 0.0483
L-isoleucine	52.748 ~ 79.122	Thymidine	0.146 ~ 0.219
L-leucine	54.58 ~ 81.87	Sodium chloride	5279.8 ~ 7919.7
L-lysine HCl	73.74 ~ 110.61	Potassium chloride	284.72 ~ 427.08
L-methionine	15.896 ~ 23.844	Calcium chloride (anhydrous)	86.644 ~ 129.966
L-phenylalanine	30.392 ~ 45.588	Calcium nitrate 4H ₂ O	20 ~ 30
L-proline	10.9 ~ 16.35	Magnesium chloride (anhydrous)	11.444 ~ 17.166
L-serine	24.9 ~ 37.35	Magnesium sulfate (anhydrous)	48.844 ~ 73.266
L-threonine	44.42 ~ 66.63	Sodium dihydrogen phosphate (anhydrous)	43.48 ~ 65.22
L-tryptophan	7.808 ~ 11.712	Disodium monohydrogen phosphate (anhydrous)	188.408 ~ 282.612
L-tyrosine	33.888 ~ 50.832	Glucose (anhydrous)	1860.4 ~ 2790.6
L-valine	43.86 ~ 65.79	Ferric nitrate 9H ₂ O	0.04 ~ 0.06
Glutathione	0.2 ~ 0.3	Copper sulfate 5H ₂ O	0.0005 ~ 0.00075

Para-aminobenzoic acid	0.2 ~ 0.3	Ferrous sulfate 7H ₂ O	0.1668 ~ 0.2502
Biotin	0.04148 ~ 0.06222	Zinc sulfate 7H ₂ O	0.1728 ~ 0.2592
Calcium pantothenate	1.746 ~ 2.619	Phenol red	5.248 ~ 7.872
Choline chloride	4.992 ~ 7.488		

4. The basal medium according to any one of claims 1 to 3, further comprising 2.5 to 4.5 g/L HEPES, and NaHCO₃ in an amount required for an adjustment to desired pH.

5. A medium for culturing ES cells comprising the basal medium according to claim 4, insulin, transferrin, 2-mercaptoethanol, 2-ethanolamine, sodium selenite, oleic acid which has formed a complex with fatty acid-free bovine serum albumin, and LIF (leukemia inhibitory factor).

6. A method for culturing ES cells using the medium for culturing ES cells according to claim 5.